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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,261	08/07/2001	Thierry Livache	211842US2PCT	9176

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EXAMINER	
FORMAN, BETTY J	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 01/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

SM. SM.

Office Action Summary	Application No.	Applicant(s)	
	09/890,261	LIVACHE ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *16-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

FINAL ACTION

Status of the Claims

1. This action is in response to papers filed 24 October 2003 in which claims 1-15 were amended and a translation of the foreign priority document was submitted. All of the amendments have been thoroughly reviewed and entered.

The previous rejections in the Office Action dated 27 May 2003 are withdrawn in view of the amendments. All of the arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection necessitated by amendment are discussed.

Claims 1-15 are under prosecution.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States

> before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 5, 7 and 12-15 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Teoule et al (U.S. Patent No. 5,837,859, filed 22 September 1995) as defined by New Riverside University Dictionary, Riverside Publishing Co. 1984, page 388).

Regarding Claim 1, Teoule et al disclose a method for producing a matrix comprising dispensing with an electrode a ligand on to a conductive carrier and electrochemically fixing (i.e. adhered, Column 5, lines 45-56) by the electrode the ligand to the conductive carrier wherein the ligand is coupled to an electropolymerizable monomer (i.e. pyrrole) and wherein the dispensing and fixing are conducted simultaneously (Example 2: Column 9, line 36-Column 12, line 67).

The instantly claimed "dispensing with an electrode" is undefined in the claim. However, New Riverside University Dictionary defines "dispense" as "distribute". Teoule et al specifically utilizes an electrode to distribute a ligand on a substrate and specifically to a localized location wherein all of the electrodes in the cell are used in the dispending and as such any one of the working electrode, counter electrode and reference electrode meet the limitations of the claims (Column 9, lines 43-56).

Regarding Claim 2, Teoule et al disclose the method wherein the dispensing utilizes an electrode having a reservoir (i.e. cell) containing the ligand coupled to the electropolymerizable monomer and having a conductive part (Column 9, lines 43-56 and Fig. 4a).

Regarding Claim 5, Teoule et al disclose the method further comprising dispensing with the electrode another ligand on another conductive carrier and electrochemically fixing the ligand to the carrier wherein the dispensing and fixing are conducted simultaneously and the steps of dispensing are conducted successively (Example 5: Column 13, lines 34-58).

Regarding Claim 7, Teoule et al disclose the method further comprising dispensing with the electrode another ligand on another conductive carrier and electrochemically fixing the ligand to the carrier wherein the dispensing and fixing are conducted simultaneously and the steps of dispensing are conducted simultaneously (Column 6, lines 1-16).).

Regarding Claim 12, Teoule et al disclose the method wherein dispensing comprises dispensing a solution containing the ligand coupled to the electropolymerizable monomer and a doping agent (Column 9, lines 58-61).

Regarding Claim 13, Teoule et al disclose the method wherein the electropolymerizable monomer comprises pyrrole (Column 9, lines 57-61).

Regarding Claim 14, Teoule et al disclose the method wherein fixing of the ligand by electro-copolymerization of both the electropolymerizable monomer and the ligand coupled thereto (Column 5, lines 45-56).

Regarding Claim 15, Teoule et al disclose the method wherein the ligand is a nucleotide or oligonucleotide (Column 2, lines 64-67).

4. Claims 1, 2, 5, 7 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Livache et al (Nucleic Acids Research, 1994, 22(15): 2915-2921) as defined by New Riverside University Dictionary, Riverside Publishing Co. 1984, page 388).

Regarding Claim 1, Livache et al disclose a method for producing a matrix comprising dispensing with an electrode a ligand on to a conductive carrier and electrochemically fixing (Abstract) by the electrode the ligand to the conductive carrier wherein the ligand is coupled to

an electropolymerizable monomer (i.e. pyrrole) and wherein the dispensing and fixing are conducted simultaneously (page 2915, right column and page 2920, right column).
The instantly claimed "dispensing with an electrode" is undefined in the claim. However, New Riverside University Dictionary defines "dispense" as "distribute". Teoule et al specifically utilizes an electrode to distribute a ligand on a substrate and specifically to a localized location wherein all of the electrodes in the cell are used in the dispending and as such any one of the working electrode, counter electrode and reference electrode meet the limitations of the claims (page 2917, Fig. 3 and page 2918, first and second full paragraphs).

Regarding Claim 2, Livache et al disclose the method wherein the dispensing utilizes an electrode having a reservoir (i.e. cell) containing the ligand coupled to the electropolymerizable monomer and having a conductive part (page 2917, Fig. 3 and page 2918, first and second full paragraphs).

Regarding Claim 5, Livache et al disclose the method further comprising dispensing with the electrode another ligand on another conductive carrier and electrochemically fixing the ligand to the carrier wherein the dispensing and fixing are conducted simultaneously and the steps of dispensing are conducted successively (Abstract and page 1920, right column).

Regarding Claim 7, Livache et al disclose the method further comprising dispensing with the electrode another ligand on another conductive carrier and electrochemically fixing the ligand to the carrier wherein the dispensing and fixing are conducted simultaneously and the steps of dispensing are conducted simultaneously (Abstract and page 1920, right column).

Regarding Claim 12, Livache et al disclose the method wherein dispensing comprises dispensing a solution containing the ligand coupled to the electropolymerizable monomer i.e. pyrrole and a doping agent i.e. $LiClO_4$ (page 2917, left column first full paragraph).

Regarding Claim 13, Livache et al disclose the method wherein the electropolymerizable monomer comprises pyrrole (page 2917, left column first full paragraph).

Regarding Claim 14, Livache et al disclose the method wherein fixing of the ligand by electro-copolymerization of both the electropolymerizable monomer and the ligand coupled thereto (Abstract and page 2918, left and right columns and Fig. 4).

Regarding Claim 15, Livache et al disclose the method wherein the ligand is a nucleotide or oligonucleotide (Abstract page 2918, left and right columns and Fig. 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3, 4, 6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Livache et al (Nucleic Acids Research, 1994, 22(15): 2915-2921) as defined by New Riverside University Dictionary, Riverside Publishing Co. 1984, page 388) and further in view of Ohkawa (U.S. Patent No. 5,486,337, issued 23 January 1996).

Regarding Claim 3, Livache et al disclose a method for producing a matrix comprising dispensing with an electrode a ligand on to a conductive carrier and electrochemically fixing (Abstract) by the electrode the ligand to the conductive carrier wherein the ligand is coupled to an electropolymerizable monomer (i.e. pyrrole) and wherein the dispensing and fixing are conducted simultaneously (page 2915, right column and page 2920, right column).

The instantly claimed "dispensing with an electrode" is undefined in the claim. However, New Riverside University Dictionary defines "dispense" as "distribute". Teoule et al specifically utilizes an electrode to distribute a ligand on a substrate and specifically to a localized location wherein all of the electrodes in the cell are used in the dispending and as such any one of the working electrode, counter electrode and reference electrode meet the limitations of the claims (page 2917, Fig. 3 and page 2918, first and second full paragraphs).

Livache et al do not teach dispensing with an electrode having a ligand insertion and evacuation means. However, electrodes having insertion (sample liquid source) and evacuation (open end) means were well known in the art at the time the claimed invention was made as taught by Ohkawa (Column 7, lines 7-35). Furthermore they teach that their dispensing electrode dispenses very small droplets to desired locations on the carrier with accuracy and without loss of liquid (Abstract and Column 1, line 55-Column 2, line 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the dispensing electrode of Ohkawa to the dispensing of Livache et al. One of ordinary skill in the art would have been motivated to do so to thereby reduce the volume of expensive solutions and for the expected benefit of accurately dispensing very small droplets to desired locations on the carrier without loss of costly solution as taught by Ohkawa (Abstract and Column 1, line 55-Column 2, line 1).

Regarding Claim 4, Livache et al teach the method wherein the dispensing electrode is a wire (page 2920, right column) but they do not specifically teach a contact between the electrode and carrier is by a drop of ligand on the electrode. However, Ohkawa teach a similar method wherein contact between the electrode and carrier is by a drop of ligand on the electrode (Column 7, lines 7-35 and Fig. 4-6) wherein the contact via the drop reduces the amount of costly ligand solution required for dispensing a ligand onto a carrier (Column 1, line 57-Column 2, line 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the dispensing of Livache et al with the dispensing

via a drop on the electrode for the expected benefit of reducing the amount of costly ligand solution required for dispensing a ligand onto a carrier as taught by Ohkawa (Column 1, line 57-Column 2, line 1).

Regarding Claim 6, Livache et al teach the method wherein the ligand in printed onto the carrier via electrodes (page 2920, right column). While they do not define the electrodes as "print heads", the claimed print heads are not defined within the claim. Therefore, because the electrodes of Livache et al print ligands onto the carrier they are reasonably interpreted as print heads. Furthermore, Ohkawa teach the similar method wherein their dispensing electrode prints onto the carrier (Column 7, lines 7-35 and Fig. 4-6) and wherein their dispensing electrode accurately dispenses very small droplets to desired locations on the carrier without loss of costly solution as taught by Ohkawa (Abstract and Column 1, line 55-Column 2, line 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the dispensing print head of Ohkawa to the printing of Livache et al for the expected benefit of accurately dispensing very small droplets to desired locations on the carrier without loss of costly solution as taught by Ohkawa (Abstract and Column 1, line 55-Column 2, line 1).

Regarding Claims 8-10, Livache et al teach the method wherein the dispensing comprises dispensing on a plurality of conductive zones (i.e. in a matrix, Abstract). Furthermore, their conductive carrier is also insulating because all materials have both insulating and conducting properties. Therefore, the carrier of Livache et al is also insulating. However, they are silent regarding the zones of conductive material on an insulating carrier. Ohkawa teach the similar method wherein the dispensing comprises dispensing on a plurality of conductive zones arranged on an insulating carrier (Claim 8) wherein the zones are electrically interconnected (Claim 9) and wherein the zones are electrically addressable separately activated (Claim 10) wherein the zoned-insulating carrier provides for accurate positioning of the ligand (Column 6, line 63-Column 7, line 52). It would have been obvious to

one of ordinary skill in the art at the time the claimed invention was made to apply the zoned-insulating carrier of Ohkawa to the ligand dispensing of Livache et al for the expected benefit of accurately positioning the ligand as taught by Ohkawa (Column 6, line63-Column 7, line 7).

Regarding Claim 11, Livache et al teach the method wherein the conductive material is platinum (page 2918, left column, first full paragraph) and Ohkawa teach the similar method wherein the conductive material is silver (Column 5, lines 32-35).

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

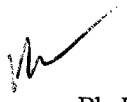
Conclusion

8. No claim is allowed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (703) 306-5878 until 13 January 2004. Starting 14 January 2004, the examiner's phone number will be (517) 272-0741. The examiner can normally be reached on 6:00 TO 3:30 Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196. Starting 14 January 2003, the receptionist telephone number will be (517)-272-0507.



BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
January 6, 2004